

Claims

- [c1] A system for detecting a fault in a transmission link, comprising:
- a reference level generator operable to output a reference level selectable according to one of a direct current (DC) mode threshold and an alternating current (AC) mode threshold, wherein the DC mode threshold is a fixed potential and the AC mode threshold varies with time; and
 - a comparator operable to detect the crossing of the reference level by an input signal arriving from the transmission link.
- [c2] A system as claimed in claim 1, wherein the AC mode threshold varies as a version of the input signal decaying with time.
- [c3] A system as claimed in claim 1, wherein said reference level generator is operable to selectably switch between outputting a lower threshold and an upper threshold as the DC mode threshold, wherein said comparator is operable to detect a crossing of the upper threshold and to detect a crossing of the lower threshold.

- [c4] A system as claimed in claim 3, wherein said comparator detects a falling crossing of the lower threshold and detects a rising crossing of the upper threshold.
- [c5] A system as claimed in claim 4, wherein said reference level generator further comprises a multiplexer operable to select between outputting the DC mode threshold and the AC mode threshold.
- [c6] A system as claimed in claim 1, wherein said reference level generator includes a low-pass filter coupled to the input signal and is operable to generate the AC mode threshold from the input signal.
- [c7] A system as claimed in claim 6, wherein said low-pass filter includes a series resistor coupled between the input signal and said comparator.
- [c8] A system as claimed in claim 7, wherein said low-pass filter includes a shunt capacitor coupled between the reference level and a fixed potential.
- [c9] A system as claimed in claim 8, wherein said low-pass filter includes a field effect transistor (FET) having a drain to which the input signal is coupled, said FET having a controlled transconductance.
- [c10] A system as claimed in claim 9, wherein said low-pass

filter includes a shunt capacitor coupled between the reference level and a fixed potential.

- [c11] A system as claimed in claim 1, wherein said system is operable to detect a short-circuited capacitor in an AC coupled transmission link when said comparator fails to detect a crossing of the DC mode threshold by the input signal.
- [c12] A system as claimed in claim 1, wherein said reference level generator is operable to output a first level of the AC mode threshold, wherein said comparator is operable to detect a falling crossing of the first level and said reference level generator is operable to output a second level of the AC mode threshold higher than the first level, wherein said comparator is operable to detect a rising crossing of the second level.
- [c13] A system as claimed in claim 12, wherein the separation between the first level and the second level is adjustable according to a setting of said comparator.
- [c14] A system as claimed in claim 12 wherein said reference level generator is further operable to vary the reference level between the first level and the second level in response to feedback from said comparator.
- [c15] A system as claimed in claim 14, wherein the reference

level is set to the first level when said comparator detects a rising crossing of the reference level, and the reference level is set to the second level when said comparator detects a falling crossing of the reference level.

[c16] A system as claimed in claim 1, wherein said comparator is operable to detect a falling crossing of the reference level when the input signal reaches a first value and is operable to detect a rising crossing of the reference level when the input signal reaches a second value, wherein the separation between the first value and the second value is adjustable according to a setting of said comparator.

[c17] A system as claimed in claim 1, wherein said reference level generator is operable to maintain the DC mode threshold at a substantially constant level, wherein said comparator is operable to detect a falling crossing of the DC mode threshold and to detect a rising crossing of the DC mode threshold at substantially the same level of the input signal.

[c18] A method of detecting a fault in a transmission link, comprising:
providing a reference level selectable according to one of a direct current (DC) mode threshold and an alternating current (AC) mode threshold, wherein the DC mode

threshold is a fixed potential and the AC mode threshold varies with time; and
comparing an input signal arriving from the transmission link with one of the DC mode threshold and the AC mode threshold to determine whether a fault is present in the transmission link.

- [c19] A method as claimed in claim 18, wherein the AC mode threshold varies as a version of the input signal decaying with time.
- [c20] A method as claimed in claim 19, wherein, when the input signal is compared to the DC mode threshold, the input signal is compared to each of a lower threshold and an upper threshold as the DC mode threshold.
- [c21] A method as claimed in claim 18, wherein the AC mode threshold is generated by low-pass filtering the input signal.
- [c22] A method as claimed in claim 18 further comprising detecting a short-circuited capacitor in an AC coupled transmission link when said comparing fails to detect a crossing of the DC mode threshold by the input signal.
- [c23] A method as claimed in claim 18, wherein the AC mode threshold is switched between a first level and a second level higher than the first level, wherein said comparing

detects a falling crossing of the first level and said comparing detects a rising crossing of the second level.

[c24] A method as claimed in claim 23, wherein the separation between the first level and the second level is adjustable.

[c25] A method as claimed in claim 18, wherein said comparing detects a falling crossing of the reference level when the input signal reaches a first value and detects a rising crossing of the reference level when the input signal reaches a second value, wherein the separation between the first value and the second value is adjustable.

[c26] A method as claimed in claim 18, wherein said DC mode threshold is maintained at a substantially constant level, wherein said comparing detects a falling crossing of the DC mode threshold and detects a rising crossing of the DC mode threshold at substantially the same level of the input signal.

[c27] A method as claimed in claim 23, wherein the reference level is varied between the first level and the second level in response to feedback from said comparing.

[c28] A method as claimed in claim 27, wherein the reference level is set to the first level when said comparing detects a rising crossing of the reference level.

[c29] A method as claimed in claim 27, wherein the reference level is set to the second level when said comparing detects a falling crossing of the reference level.

[c30] A method as claimed in claim 28 wherein the reference level is set to the second level when said comparing detects a falling crossing of the reference level.